AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 *et seq*., the "Act"),

University of Guam Marine Laboratory
UOG Station
Mangilao, GU 96923

is authorized to discharge aquaria circulation water effluent from the University of Guam Marine Laboratory seawater system through Discharge Serial No. 001 and Discharge Serial No. 002, located at Mangilao, Guam,

Latitude: 13° 25' 36" N
Longitude: 144° 47' 44" E

to Category M-2 (Good) receiving waters named Pago Bay, of the Pacific Ocean, in accordance with effluent limitations, monitoring requirements, and other conditions set forth herein, and in the attached USEPA Region 9 *Standard Federal NPDES Permit Conditions*, dated May 10, 1990.

This permit shall become effective on _____ ,1999.

This permit and the authorization to discharge shall expire at midnight, _____ , 2004.

Signed this _____ day of _____ , 1999.

For the Regional Administrator

_____
Alexis Strauss, Director
Water Division

TABLE OF CONTENTS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Effluent limitations and monitoring requirements are based upon an average flow of 0.00946 m^3/sec (0.216 mgd). The permittee is authorized to discharge from Discharge Serial No. 001:

   a. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Maximum Discharge Limitations Unless Otherwise Noted						Monitoring Requirements	
	Average Monthly (lbs/day)	Average Weekly (lbs/day)	Maximum Daily (lbs/day)	Average Monthly	Average Weekly	Maximum Daily	Monitoring Frequency	Sample Type
Flow (mgd)	n/a [1]	n/a	n/a	[2]	n/a	[2]	Continuous	Continuous
Total Suspended Solids [3, 4]	22.3	n/a	n/a	[2]	n/a	15 mg/L	Quarterly [5]	Discrete

[1] n/a = not applicable.

[2] Monitoring and reporting required. No discharge limitation set at this time.

[3] Discharge limitation is based on Best Professional Judgement and previous NPDES permit.

[4] Both the influent (i.e., water supply) and effluent shall be monitored and reported. The discharge limitation (in lbs/day) applies to the mass of total suspended solids discharged from Discharge Serial No. 001, where effluent flow $_{001}$ in mgd × effluent concentration $_{001}$ in mg/L × 8.34) = total suspended solids in lbs/day.

[5] Quarterly means January-March/April-June/July-September/October-December. Every other quarterly sample shall be collected during cleaning of the animal aquaria and noted as such on the Discharge Monitoring Report form.

Effluent Characteristic	Maximum Discharge Limitations Unless Otherwise Noted						Monitoring Requirements	
	Average Monthly (lbs/day)	Average Weekly (lbs/day)	Maximum Daily (lbs/day)	Average Monthly	Average Weekly	Maximum Daily	Monitoring Frequency	Sample Type
pH [6]	Not less than 7.0 units nor greater than 9.0 units.						Quarterly	Discrete
Orthophosphate (PO_4-P)	n/a	n/a	[2]	n/a	n/a	[2] (mg/L)	Quarterly	24 hr Composite
Nitrate-nitrogen (NO_3-N)	n/a	n/a	[2]	n/a	n/a	[2] (mg/L)	Quarterly	24 hr Composite
Salinity	n/a	n/a	n/a	n/a	n/a	[2] (ppt)	Quarterly	Discrete
Temperature	n/a	n/a	n/a	n/a	n/a	[2] (°C)	Quarterly	Discrete

[6] Discharge limitation is based on applicable *Revised Guam Water Quality Standards.*

2. Effluent limitations and monitoring requirements are based upon an average flow of 0.00946 m^3/sec (0.216 mgd). The permittee is authorized to discharge from Discharge Serial No. 002:

b. Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Maximum Discharge Limitations Unless Otherwise Noted						Monitoring Requirements	
	Average Monthly (lbs/day)	Average Weekly (lbs/day)	Maximum Daily (lbs/day)	Average Monthly	Average Weekly	Maximum Daily	Monitoring Frequency	Sample Type
Flow (mgd)	n/a [7]	n/a	n/a	[8]	n/a	[8]	Continuous	Continuous
Total Suspended Solids [9, 10]	22.3	n/a	n/a	[8]	n/a	15 mg/L	Quarterly [11]	Discrete

[7] n/a = not applicable.

[8] Monitoring and reporting required. No discharge limitation set at this time.

[9] Discharge limitation is based on Best Professional Judgement and previous NPDES permit.

[10] Both the influent (i.e., water supply) and effluent shall be monitored and reported. The discharge limitation (in lbs/day) applies to the mass of total suspended solids discharged from Discharge Serial No. 002, where effluent flow $_{001}$ in mgd × effluent concentration $_{001}$ in mg/L × 8.34) = total suspended solids in lbs/day.

[11] Quarterly means January-March/April-June/July-September/October-December. Every other quarterly sample shall be collected during cleaning of the animal aquaria and noted as such on the Discharge Monitoring Report form.

Effluent Characteristic	Maximum Discharge Limitations Unless Otherwise Noted						Monitoring Requirements	
	Average Monthly (lbs/day)	Average Weekly (lbs/day)	Maximum Daily (lbs/day)	Average Monthly	Average Weekly	Maximum Daily	Monitoring Frequency	Sample Type
pH [12]	Not less than 7.0 units nor greater than 9.0 units.						Quarterly	Discrete
Orthophosphate (PO_4-P)	n/a	n/a	[8]	n/a	n/a	[8] (mg/L)	Quarterly	24 hr Composite
Nitrate-nitrogen (NO_3-N)	n/a	n/a	[8]	n/a	n/a	[8] (mg/L)	Quarterly	24 hr Composite
Salinity	n/a	n/a	n/a	n/a	n/a	[8] (ppt)	Quarterly	Discrete
Temperature	n/a	n/a	n/a	n/a	n/a	[2] (°C)	Quarterly	Discrete

[12] Discharge limitation is based on applicable *Revised Guam Water Quality Standards.*

3. The discharge shall be free from substances which:

   a. Cause visible floating materials, debris, oils, grease, scum, foam, or other floating matter which degrades water quality or use;

   b. Produce visible turbidity, settle to form deposits or otherwise adversely affect aquatic life;

   c. Produce objectionable color, odor, or taste, directly or by chemical or biological action;

   d. Injure or are toxic or harmful to humans, animals, plants or aquatic life; and

   e. Induce the growth of undesirable aquatic life.

4. The discharge shall not cause:

   a. The enterococci bacteria concentrations in the receiving water based on 5 sequential samples collected over a 30 day period to exceed a geometric mean of 35 enterococci/100 mL, nor any instantaneous reading from a single sample to exceed 104 enterococci/100 mL.

   b. The pH in the receiving waters to vary more than 0.5 units from the ambient pH, except due to natural causes.

   c. The orthophosphate (PO_4-P) concentration in the receiving waters to exceed 0.05 mg/L.

   d. The nitrate-nitrogen concentration (NO_3-N) in the receiving waters to exceed 0.20 mg/L.

   e. The concentration of dissolved oxygen in the receiving waters to be less than 75% saturation.

   f. The salinity of the receiving waters to be altered more than 10% from the ambient condition, except when due to natural conditions.

   g. The concentrations of suspended matter in the receiving waters to be increased more than 10% from the ambient condition, or to exceed 20 mg/L except when due to natural conditions.

   h. The turbidity in the receiving waters to exceed 1.0 NTU over the ambient condition, except when due to natural conditions.

i. The temperature of the receiving waters to be changed by more than 1.0° C from the ambient condition.

5. Discharge Prohibitions

a. The discharge of any pollutant in toxic amounts, including substances which may accumulate to toxic amounts during the expected life of organisms in the receiving water, which are lethal to, or which produce deleterious genetic, physiological, or behavioral effects in organisms is strictly prohibited.

b. The discharge of any radioactive wastes and contaminated radioactive materials from research facilities is strictly prohibited.

6. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations:

a. Influent (i.e., water supply) samples shall be taken immediately prior to introduction to the animal aquaria where representative samples of the influent can be obtained.

b. Effluent samples shall be taken after any in-laboratory return flows and the last treatment process and prior to mixing with the receiving waters, where representative samples of the effluent can be obtained.

B. DEFINITIONS

1. *Average monthly discharge limitation* means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

2. *Average weekly discharge limitation* means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

3. *24 hour Composite sample* means a combination of eight individual portions taken at equal time intervals over any 24-hour period that reasonably represents the calendar day. The volume of each individual portion shall be directly proportional to the discharge flow rate at the time of sampling.

4. *Daily discharge* means the "discharge of a pollutant" measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is

calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

5. *Discrete sample* means any individual sample collected in less than 15 minutes. The sampling period shall coincide with the period of maximum discharge flow.

6. *Maximum daily discharge limitation* means the highest allowable "daily discharge."

C. STANDARD OPERATING PLAN

The permittee shall develop and implement a standard operating plan (SOP) to prevent/minimize the discharge of pollutants from the permitted facility into Pago Bay. The SOP shall include Best Management Practices (BMPs) for the operation and maintenance of the seawater system. The SOP shall also include descriptions of the application of effluent treatment technologies, management practices regarding the seawater system (including animal aquaria) cleaning procedures, animal feeding practices [13], and a chemical/other deleterious substance management plan. The chemical/other deleterious substances management plan shall include descriptions of handling, storage, disposal, spill/clean-up, and use/application practices to prevent/minimize the discharge of chemical/deleterious substances into Pago Bay. The permittee shall submit this SOP to USEPA Region 9 and GEPA within 180 days of the effective date of this permit.

D. RECEIVING WATER MONITORING CONDITIONS

1. At the direction of USEPA Region 9, the permittee shall submit for USEPA Region 9 approval a water quality, sediment quality, biological resources, and/or human health risk monitoring program; *CWA Section 403: Procedural and Monitoring Guidance* (EPA 842-B-94-003, 1994) should be consulted in conjunction with monitoring program development.

2. In accordance with 40 CFR 122 and 124, USEPA Region 9 may modify this permit to include appropriate receiving water monitoring requirements to ensure discharge compliance with Section 403(c) of the Act.

3. On a quarterly basis, the permittee shall conduct the following monitoring program in the immediate vicinity of the discharge of aquaria circulation water effluent from the UOG Marine Laboratory seawater system to Pago Bay. This receiving water monitoring program shall include visual observations of biota in the immediate vicinity of the discharge and a description of climatic and receiving water characteristics (e.g., weather observations, floating debris, discoloration, wind speed and direction, time observation,

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[13] The SOP shall specifically address animal feeding procedures (e.g., feed application, excess feed removal and disposal, etc.) which involve feed containing growth hormones.

and tide height, etc.) at the time biological observations are conducted. A written description of these visual observations shall be submitted as an attachment to the discharge monitoring reports forms (see part E.4 of this permit).

E. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. All influent and effluent monitoring and receiving water monitoring, sample preservation, and analyses shall be performed as described in the most recent edition of 40 CFR 136, Appendix B, unless otherwise specified in this permit. For any priority toxic pollutant effluent analyses, the permittee shall utilize an approved test procedure with a Method Detection Limit [14] (MDL) that is lower than the marine waters acute, chronic, and human health criteria concentrations referenced in *Revised Guam Water Quality Standards*. If the MDL is higher than the criteria concentrations, then the permittee shall utilize the approved test procedure with the lowest MDL. Effluent analyses for metals shall measure "total recoverable metal", except as provided under 40 CFR 122.45(c)(3).

2. The results of all monitoring required by this permit shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this permit.

3. The permittee shall submit influent and effluent monitoring results on monthly Discharge Monitoring Report (DMR) forms (EPA No. 3320-1) to USEPA Region 9 and GEPA by the 28th of April, July, October, and January for each period covering the previous three calendar months (*e.g.*, January, February, and March monthly DMRs are due by April 28th). Unless otherwise specified, effluent flow shall be reported in terms of the arithmetic mean flow over each monthly period, and the maximum daily flow over that monthly period.

4. For the purposes of reporting, the permittee shall use the reporting threshold equivalent to the laboratory's method detection limit [14] (MDL). As such, the permittee must utilize a standard calibration where the lowest standard point is equal to or less than the concentration of the minimum level [15] (ML). Analytical results at or above the laboratory's MDL shall be reported on the DMR as the measured concentration. For

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[14] The Method Detection Limit (MDL) is the minimum concentration of an analyte that can be detected with 99% confidence, as defined by a specific laboratory method in 40 CFR 136, Appendix B.

[15] The Minimum Level (ML) is the concentration in a sample equivalent to the concentration of the lowest calibration standard analyzed in a specific analytical procedure, assuming that all the method-specific sample weights, volumes, and processing steps have been followed. Where a promulgated ML is not available, an interim ML is calculated by multiplying the MDL by a factor of 3.18 and then rounding this calculated value to the nearest multiple of (1, 2, or 5) × 10^n, where n is zero or an integer. Alternatively, interim MLs for metals may be rounded to the nearest whole number.

analytical results between the MDL and the ML, the permittee shall report in the comment section on the DMR the standard deviation (S) value (determined by the laboratory during the MDL study) and the number of sample aliquots (n). Analytical results below the laboratory's MDL shall be reported as zero (*i.e.*, "0").

5. Duplicate signed copies of all reports required by this permit shall be submitted to the Regional Administrator and GEPA at the following addresses:

USEPA Region 9	Administrator
Pacific Insular Area Program (CMD-5)	Guam Environmental Protection Agency
75 Hawthorne Street	P. O. Box 22439-GMF
San Francisco, CA 94105-3901	Barrigada, GU 96921
Telephone: 415/744-1484	Telephone: 671/475-1658

Attachment 1:

LOCATION MAP

Attachment 2:

SEAWATER SYSTEM FLOW DIAGRAM

Attachment 3:

STANDARD NPDES PERMIT CONDITIONS